



Unit III

Relational DataBase Design

Relational Model

- The **Relational model** uses a collection of tables to represent both data and the relationships among those data.
- Tables are also known as **relations**.
- **Relation**: made up of 2 parts:
 - **Instance**: a table, with rows and columns.

#rows = cardinality , #fields = degree / arity

- **Schema**: specifies name of relation, plus name and type of each column

E.g.: Students(*sid*: string, *name*: string, *login*: string, *age*: integer, *gpa*: real)

Relational Model

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The diagram illustrates a relational table with the following data:

SID	SName	SAge	SClass	SSection
1101	Alex	14	9	A
1102	Maria	15	9	A
1103	Maya	14	10	B
1104	Bob	14	9	A
1105	Newton	15	10	B

Annotations in the diagram:

- attributes**: A curved arrow points from this label to the header row (SID, SName, SAge, SClass, SSection).
- column**: A straight arrow points from this label to the SAge column.
- tuple**: A straight arrow points from this label to the 1104 row.
- table (relation)**: A long curved arrow at the bottom points from this label to the entire table structure.

Relational Model

Contd...

- **Advantage:**

- Structural Independence
- Its simple to navigate
- Greater Flexibility
- Better Security

- **Disadvantages**

- Performance
- Data Complexity
- Hardware and Software overhead
- Physical Storage Consumption